DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3, 5-15 are rejected under 35 U.S.C 103(a) as being unpatentable over **Brooks** (US 6,336,045 B1) in view of **Nicolau and Lee** (*Biomedical Applications of Micro-and Nanoengineering*, Proceedings of SPIE Vol. 4937, 2002).

Regarding Claims 1, 6 and 10, Brooks discloses method of identification of a living body, comprising the steps of: detecting an electromagnetic, deriving a time waveform of the electromagnetic wave by sampling the electromagnetic wave detected in the detecting step; extracting biological information by filtering the time waveform through a frequency property;

and comparing the biological information with preliminarily memorized biological information, wherein the time waveform is derived according to the delay time of the electromagnetic wave caused by the change of position of the living body (**Claim 3: column 24, lines 21-34; figures 11-14; column 13 lines 19-51 and 58-67; column 14, lines 1-49 and 56-67; column 15, lines 1-5**).

Brooks fail to disclose that the frequency ranges from 300 GHz to 30 THz.

However, Brooks suggest the use of **different frequencies** for optimized results depending upon the type of field (**electromagnetic** in this case, **column 4, lines 3-5**) being used (**column 4, lines 21-22; column 9, lines 24-27**).

Further more; Nicolau and Lee describe the use of terahertz waves in biometric recognition (**Table 1, Biometric Recognition**).

3. Based on the teaching of Brooks in view of Nicolau and Lee, it would have been obvious to one of ordinary skill in the art at the time of invention to look for the optimum rang of frequency within terahertz waves including high frequency ranges such as 300 GHz to 30 THz with out the practice of any inventive skills *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding Claim 3, Brooks discloses a method of identification wherein the biological information could be information on positional variation selected from the group consisting of voice cord variation, bone vibration, shape change of eye lens, pupil contraction and pupil dilation, since the system is capable of sensing specific attributes of an organism (**column 15, lines 33-55**) these attributes could be fingerprints, iris pigment pattern, retina prints or voice patter(**column 1, lines 41-43**), furthermore Brooks discloses that the system is capable of

measuring phase shift/phase angle and thus the positional variation (**column 8, lines 22-33; column 13, lines 45-48**).

4. Based on the description provided, it is obvious to one of ordinary skill in the art that Brooks' discloser is capable of recognizing an organism based on pulse vibration, voice cord variation, bone vibration, shape change of eye lens, pupil contraction and/or pupil dilation.

Regarding Claim 5, Brooks discloses a method of identification wherein the biological information could be fingerprints, iris pigment pattern, retina prints or voice patterns (**column 1, lines 41-43**). Brooks refer to these characteristic as the sensed attribute of organism (**column 15, lines 31-55**).

Regarding Claims 7 and 8, Brooks discloses an apparatus for identifying a living body, comprising: a detecting section for detecting the electromagnetic wave pulse generated from the living body; an information-collecting section for deriving a time waveform of the electromagnetic wave pulse by sampling the electromagnetic wave pulse detected in the detecting section and extracting biological information by filtering the time waveform through a frequency property, a memory section for preliminarily memorizing biological information; and an identifying section for comparing the biological information derived by the information-collecting section with the biological information memorized by the memory section, wherein the time waveform is derived according to the delay time of the electromagnetic wave caused by the change of position of the living body (**Claim 3: column 24, lines 21-34; figures 11-14; column 13 lines 19-51 and 58-67; column 14, lines 1-49 and 56-67; column 15, lines 1-5)**

Brooks fail to disclose that the frequency ranges from 300 GHz to 30 THz.

However, Brooks suggest the use of **different frequencies** for optimized results depending upon the type of field **(electromagnetic** in this case, **column 4, lines 3-5)** being used **(column 4, lines 21-22; column 9, lines 24-27)**.

5. Therefore, based on the teaching of Brooks it would have been obvious to one of ordinary skill in the art at the time of invention to look for the optimum rang of frequency including high frequency ranges such as 300 GHz to 30 THz with out the practice of any inventive skills *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding Claim 9, Brooks discloses an apparatus according wherein the information-collecting section derives the time waveform regarding the biological information, the memory section preliminarily memorizes a time waveform regarding the living body, and the identifying section compares the time waveform regarding the living body derived by the information-collecting section with the time waveform regarding the living body memorized by the memory section to identify the living body **(column 14, lines 8-18)**.

Regarding Claim 11, Brooks discloses a method of identification according comprising a step of identifying the living body by the result of the comparing step **(Claim 4, column 24, lines 35-38; column 14, lines 8-18)**.

Regarding Claim 12, Brooks disclose a method for deriving a time waveform, comprising the steps of: **detecting** an electromagnetic wave generated from the living body **(figure 23)**, and deriving a time **waveform** of the electromagnetic wave by sampling the electromagnetic wave detected in the detecting step **(column 17, lines 7-10)**, wherein the time waveform is derived according to the delay time of the electromagnetic wave caused by the change of position of the living body.

Brooks fail to disclose that the frequency ranges from 300 GHz to 30 THz.

However, Brooks suggest the use of **different frequencies** for optimized results depending upon the type of field (**electromagnetic** in this case, **column 4, lines 3-5**) being used (**column 4, lines 21-22; column 9, lines 24-27**).

Further more; Nicolau and Lee describe the use of terahertz waves in biometric recognition (**Table 1, Biometric Recognition**).

6. Based on the teaching of Brooks in view of Nicolau and Lee, it would have been obvious to one of ordinary skill in the art at the time of invention to look for the optimum rang of frequency within terahertz waves including high frequency ranges such as 300 GHz to 30 THz with out the practice of any inventive skills *In re Boesch,* 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding Claim 13, Brooks discloses a method of identification according wherein the sampling step can be carried out in time series (**column 18, lines 52-62**).

Regarding Claim 14, Brooks disclose a method of identification wherein the sampling step is carried out at regular intervals (**column 18, lines 52-62**).

Regarding Claim 15, Brooks discloses a method of identification comprising a step of identifying the living body by the result of the comparing step (**Claim 4, column 24, lines 35-38; column 15, lines 3-5**).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited for disclosing related limitations of the applicant's claimed and disclosed invention.

Vanoni, Regis (EP 197810 A1), **Brooks; Juliana H. J**. (US 6343140 B1), **Rozenberg, Roman et al.** (US 20020031245 A1), **Mair; John et al**. (US 6367695 B1), **Tamori, Teruhiko** (US 20030072475 A1), **Breed, David S**. (US 20050046584 A1), **Brooks; Juliana H. J.** (US 6928181 B2), **Takiguchi, Kiyoaki** (US 20050180620 A1), **Robarts; James O. et al.** (US 7073129 B1), **Moore; Wayne K. et al.** (US 7135980 B2), **LeBoeuf; Steven Francis et al.** (US 20080146892 A1), **LeBoeuf; Steven Francis et al.** (US 20080146890 A1).

Oliver Graydon (*Terahertz waves penetrate the world of imaging*, Opto & Laser Europe, 2002), **Loffler et al.** (*Visualization and classification in biomedical terahertz imaging*, Physics in medicine and biology, 2002), **Zhang XC.** (*Terahertz wave imaging: horizons and hurdles*, Physics in medicine and biology, 2002).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Atia Syed (Tel No. 571-270-7134).The examiner can normally be reached on Monday-Thursday, 8:30AM to 3:30PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrell Mckinnon can be reached on 571-272-4797. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

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like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. S./
Examiner, Art Unit 4185 10/09/2008

/Terrell L Mckinnon/

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